Appendix D: FY 06 Joint Solicitation for Groundwater Research and Monitoring Proposals

September 2004

The University of Wisconsin System (UWS) and the Wisconsin Departments of Natural Resources (DNR), Agriculture, Trade, and Consumer Protection (DATCP), and Commerce annually participate in a joint solicitation for research and monitoring proposals dealing with groundwater, pesticides and/or onsite wastewater treatment systems. Up to $440,000 will be available for groundwater-related monitoring and research in fiscal year 2006 (FY 06) for new and continuing projects. The four programs, which are collectively called the Wisconsin Groundwater Research and Monitoring Program (WGRMP), are summarized as follows:

1. UWS Groundwater Research - The UWS, through its UW-Madison Water Resources Institute (WRI), has received funding since FY 90 for groundwater research. Projects may be of a fundamental or applied nature on selected aspects of groundwater research in the natural sciences, engineering, social sciences, or law. Through FY 04, the UWS has invested $4.4 million on 122 groundwater research projects. Several projects have been co-funded with DNR, Commerce and/or DATCP and 11 were co-funded through the National Institutes for Water Resources program (US Geological Survey). The UWS will have $300,000 to fund new and continuing projects in FY 06.

2. DNR Groundwater Monitoring and Research - The DNR has been funding groundwater "management practice monitoring" projects since FY 86. The intent of these studies, funded through the Groundwater Account of the Environmental Fund, was to identify appropriate management practices to reduce the impacts of potential sources of contamination. In recent years, the DNR has used funds from alternative state and federal sources, and has targeted funds at specific issues of concern, including arsenic, emerging contaminants (viruses, antibiotics), and groundwater quantity. Through FY 04, the DNR has spent approximately $5.6 million on 173 monitoring projects. Several of these projects have been co-funded with DATCP, Commerce and/or UWS. The DNR may have up to $140,000 to support groundwater research and monitoring studies in FY06, depending upon availability of funds.

3. DATCP Pesticide Research - From 1989 to 2002, DATCP had approximately $135,000 available annually to fund research on pesticide issues of regulatory importance. This money came from fees paid by pesticide manufacturers to sell products in Wisconsin. Through FY 03, the DATCP spent about $1.8 million on 42 pesticide projects. Some of these projects were co-funded with DNR and/or UWS. Due to budget constraints, DATCP will not have money to fund any new projects in FY 06. DATCP will, however, take part in the proposal review process.

4. Department of Commerce Private Onsite Wastewater Treatment System Research – The Division of Safety & Buildings (formerly in the Department of Industry, Labor, and Human Relations) received an annual appropriation of $50,000 from 1990 to 1993 to fund research on alternatives to current private sewage-system technology. In 1994, when the appropriation expired, $75,000 generated through plan review and licensing fees became available each year for research on private sewage systems. Through FY 04, Commerce has spent approximately $600,000 on eight projects. Two projects were co-funded with DNR and UWS. As of September 2004, Commerce has indicated that no funds will be available for research projects in FY 06.

The Wisconsin Groundwater Coordinating Council (GCC) provides consistency and coordination among the four state agencies in funding groundwater monitoring and research to meet state agency needs. See the "Research and Monitoring" page on the GCC website: http://dnr.wi.gov/org/water/dwg/gcc/index.htm. The reasons for this solicitation to be made jointly are to:

- Facilitate proposal writing
- Streamline the review process
- Curtail duplication
- Improve coordination among agencies and researchers
- Enhance communication among the agencies and among principal investigators (P.I.)

Joint funding of some projects may be appropriate, but joint funding is not the purpose of this solicitation because each agency has its own designated mission and priorities. Although all proposals received will be distributed to each agency, each investigator is asked to identify the agency whose mission and priorities best match their project.

Please read the solicitation carefully; it contains a description of the priorities for each agency program and other pertinent information, including a new online proposal submission process. Capital items may not be purchased with these funds, and faculty salaries plus fringe benefits will be limited to a maximum of 10% of an individual grant (e.g., for a $20,000 grant, a maximum of $2,000 can be allotted to faculty salaries and fringe benefits).

Investigators who are new to this program are encouraged to solicit an example proposal from the agency contacts listed below.

If you have questions please call the following appropriate agency contacts.

James Hurley, UW Water Resources Institute: (608) 262-0905; hurley@aqua.wisc.edu
Tim Asplund, Dept. of Natural Resources: (608) 267-7449; tim.asplund@dnr.state.wi.us
Jeff Postle, Dept. of Agriculture, Trade and Consumer Protection: (608) 224-4503; jeff.postle@datcp.state.wi.us
Harold Stanlick, Department of Commerce: (262) 521-5065; hstanlick@commerce.state.wi.us

Eligibility

Please note that each agency has separate requirements for eligibility. Review the agency-specific sections carefully. In general:

UWS:	Funds are restricted for use by faculty within the UW System or by academic staff who have achieved nomination to P.I. status.
DNR & Commerce:	Funds are restricted to use by UW System and state and county agency contractors.
DATCP:	Any college or university, research foundation or individual having a demonstrated capacity in pesticide or other applicable research may submit proposals.

Investigators who are not affiliated with the state and therefore not eligible for funding by UWS, DNR, or Commerce may wish to collaborate on a proposal with a UWS investigator or state agency staff member.

A principal investigator with unfinished Groundwater Research and Monitoring Program-funded final reports that are significantly overdue (in the case of UWS by more than six months) with respect to initially specified or understood completion dates will not be eligible for new funding. The Groundwater Coordinating Council may consider extenuating circumstances on a case-by-case basis.

Online Submission of Proposals

(Complete instructions for online submission can be found at the UW Water Resources Institute Web site.)

Proposals for the Wisconsin Groundwater Research and Monitoring Program will be submitted entirely online, through the University of Wisconsin Water Resources Institute's (WRI) Web site at http://wri.wisc.edu. The Web site will be ready for principal investigator registration and proposal uploads after October 15, 2004. **The deadline for submittal of proposals is 5:00 PM Monday, November 15, 2004.**

Please note that investigators will be required to register on the Web site prior to submitting a proposal. Once an investigator has registered, he or she may begin submitting information about one or more proposals, and may update and add new information at any time prior to the proposal deadline. Once all of the information has been provided and checked for accuracy, the investigator will be required to approve the final package for official submission. **Access to the online submission Web site will be closed after 5:00 PM (CST) on November 15, 2004.**

Investigators should be prepared to provide the following information when submitting a proposal online at the WRI Web site (see *Guidelines for Proposal Submission* on page 5 for more details):

- Title
- Investigators
- Abstract (condensed version of project summary separate from the Project Narrative)
- Location of Research
- Target agency ranking
- Adobe Acrobat file (.pdf) of proposal text
- Budget information
- Names and email addresses of three qualified reviewers of proposal, including their disciplines and specialties (at least two must be from outside of Wisconsin)

Investigators will be required to upload a .pdf version of their proposal to the WRI Web site. In order to create a .pdf file, investigators will need to either use Adobe Acrobat software or go online to Adobe's site to create a .pdf file. Adobe offers a monthly subscription for .pdf file creation or a free trial period that enables creation of 5 .pdf files at https://createpdf.adobe.com.

Proposals should be no longer than 18 pages. All pages should be 8.5" x 11". The project summary, narrative, curriculum vitae, and support pages should start on a new page, be double-spaced (except for Figure and Table legends), and use no smaller than 11-point font. All margins should be no less than 0.75 inches. The proposal must be consecutively paginated on the bottom of the page. Include literature citations in the proposal where appropriate (single-spaced within, double-spaced between). **A Word and WordPerfect template will be provided on the WRI web site. We encourage all investigators to use these pre-formatted files for their proposal text.**

Any section of a proposal that exceeds the specified maximum page limits will be grounds for returning the proposal to the author. A *Proposal Guideline Checklist* is provided on page 7 to assist proposal authors.

All proposals must be submitted online. No facsimiles of proposals and no hand-written proposals will be accepted. Special attachments (maps, brochures, etc.) will be accepted, noted, and kept on file, but will not be included in the package of materials submitted to reviewers.

Review of Proposals

All proposals received through the Wisconsin Groundwater Research and Monitoring Program (WGRMP) joint solicitation process receive reviews from the following four groups:

1. External peer review: The UW Water Resources Institute solicits a minimum of four external peer reviews of all proposals. (As part of this peer review process, investigators should provide the names, addresses and email of three suggested reviewers with expertise in the field of the proposal.)
2. The Research and Monitoring & Data Management Subcommittees of the GCC
3. The Groundwater Research Advisory Council (GRAC)
4. Staff from the funding agencies

The two most important considerations of the reviewers are 1) whether the proposal meets agency priorities as outlined in this solicitation and 2) whether the proposal is well written and scientifically sound. Other criteria include:

- project cost
- proposed timeline
- whether the proposed project methodology meets the stated objectives
- whether the resources requested are adequate to carry out the project
- whether the project investigators have the abilities to complete the proposed project
- if applicable, how the proposed project relates to past WGRMP-funded projects and how it may extend our knowledge

Additional review criteria may be applied by individual agencies (see agency-specific sections that follow).

Funding decisions will be made in March 2005. Proposals that are not chosen for funding through this solicitation may be referred to other funding sources for their consideration with permission of the investigators. Likewise, other funding organizations may refer proposals to the funding agencies involved in this solicitation.

Administration of Projects

Proposals that are funded become the property of the granting Wisconsin state agency. Please note that each agency has separate mechanisms for administering funds, and separate requirements for reporting. However, all investigators will be asked to submit a 2-page Project Summary upon completion of the project to be posted on the Water Resources Institute web site, and to make a copy of the final report available to the Water Resources Institute Library. For more information on these requirements, please contact Tim Asplund or James Hurley.

Dissemination of Project Findings

Final reports are required for each project funded through Wisconsin's Groundwater Research and Monitoring Program. Reports from UWS funded projects are kept in the Water Resources Institute Library. DATCP, Commerce, and DNR funded reports are kept on file with the respective agencies, but many are provided to the WRI Library for public distribution as well. All project investigators must submit a 2-page Project Summary upon completion of the final report. These summaries are made available on the WRI web site (http://www.wri.wisc.edu/wgrmp/wgrmp.htm).

Previously, only summaries of the funded projects were available online. During the past year, the Water Resources Library partnered with UW Libraries' Digital Collections Center to digitize and put online most WRI and selected DNR final project reports. The WRI Web site now links to the full-text reports, which are included in the University of Wisconsin Ecology and Natural Resources Digital Collection at http://uwdc.library.wisc.edu/collections.html.

Guidelines for Proposal Submission

(See WRI web site (http://wri.wisc.edu) for complete submission details)

I. Register online at the WRI web site anytime after October 15, 2004. (Each investigator must register.)

A. Name of investigator

B. Title/Position

C. Affiliation

D. Mailing Address

E. Phone number

F. Fax number

G. Email address

II. Enter information about each proposal.

A. Title

B. Investigators (from drop-down menu of investigators previously-registered on the site)

C. Abstract (condensed version of project summary)

D. Location of Research

E. Ranking of agencies in order of preference or relevance for funding (note that the selected order does not exclude consideration of a proposal by any of the agencies, but does assist the reviewers in evaluating the proposal)

III. Upload proposal text as Adobe Acrobat .pdf file. (Please use Word or WordPerfect templates provided on Web site to develop this section.)

A. Title, Investigators, Affiliations of Investigators (top of first page)

B. Project Summary (begin on same page, **not to exceed 2 double-spaced pages**)

1. Specific groundwater or related problem addressed by research/monitoring proposal.

2. What will findings contribute to problem solution or understanding?

3. Project objectives.

4. Project approach to achieve objectives including methods and procedures.

5. Users of project findings.

C. Proposal Narrative (begin on new page, **not to exceed 10 double-spaced pages**)

1. Objectives

2. Background information describing prior research/monitoring relevant to objectives, and if applicable, relationships to other projects funded through the WGRMP; references to ongoing projects and how they relate to proposed investigation; information gaps which will be filled by the proposed project.

3. Project plan outlining experimental design and schedule

4. Methods detailed enough to convince the reviewer that the investigators are up-to-date on modern techniques; a general statement alluding to techniques is not acceptable.

5. Relevance to groundwater and related problems

6. Citations

7. Training support (if any) provided by the project and information dissemination plan.

D. Curriculum vitae of Principal Investigators (begin on new page, **not to exceed 4 pages**)

   Include curriculum vitae (including recent publications) of each investigator and state the time each will spend on the project.

E. Current or pending support (begin on new page, **not to exceed 2 pages**)

IV. Enter budget information (entered online at WRI web site).

A. Salaries and wages

B. Fringe benefits (include percentage of grant to be used for faculty salaries, wages, and benefits)

C. Tuition remission charges (if applicable).

D. Supplies and publication costs: list office, laboratory, computer and field supplies separately.

E. Travel to support field operations only. Travel to meetings is excluded because of the limited funding.

F. Other costs: e.g., equipment maintenance and fabrication, subcontracts, rentals, etc.

G. Total direct costs.

V. Submit names and email addresses of three qualified reviewers, including their areas of expertise. (Two of the reviewers must be from outside Wisconsin.)

VI. Review the accuracy of the information provided and submit final proposal package. **(This step must be completed by 5:00 PM on Monday, November 15, 2004.)**

PROPOSAL GUIDELINE CHECKLIST

ITEM	GUIDELINE	THIS PROPOSAL
GENERAL PRESENTATION		
Font	Minimum of 11 point	
Margins	Minimum of 0.75”	
PAGE LIMITATIONS		
Project Summary	Maximum of 2 pages	
Narrative and supplements	Maximum of 10 pages	
Curriculum Vitae	Maximum of 4 pages total and 2 for 1 P.I.	
Current and Pending Support	Maximum of 2 pages	
Entire Proposal	Maximum of 18 pages	
PAGINATION		
Project Summary	Page 1 and 2	
Narrative and supplements	Begin on new page, paginate starting at 3	
Curriculum Vitae	Begin on new page, paginate consecutively	
Current and Pending Support	Begin on new page, paginate consecutively	
LINE SPACING		
Project Summary	Double spaced	
Narrative Body	Double spaced	
Figure Legends	Single spaced	
Tables / Titles	Single spaced	
Citations	Single within, double between	
Training and Info Transfer	Single spaced	
Curriculum Vitae	No specific guidelines	
Current and Pending Support	No specific guidelines	

UNIVERSITY OF WISCONSIN SYSTEM (UWS)
PROJECTS FUNDED
THROUGH THE GROUNDWATER RESEARCH ADVISORY COUNCIL

The UWS, through its Water Resources Institute (WRI) and its Groundwater Research Advisory Council (GRAC), seeks projects of a fundamental or applied nature on any aspect of groundwater research in the natural sciences, engineering, social sciences or law. Projects funded in the current cycle are listed on the WRI web site at http://wri.wisc.edu. The UWS has approximately $200,000 available in FY 06 to fund new projects. The remainder of the UWS groundwater research funds has been committed to ongoing projects.

Applicant Requirements: Most often the principal investigator will be a faculty member on any campus in the UWS. However, academic staff who has achieved nomination to P.I. status by endorsement of the relevant academic dean may serve in this capacity. Projects that appear to be continuations of previously funded projects with two years of UWS support and projects that have been twice rejected will not be considered. The UWS also strives to avoid funding situations where a P.I or co-P.I.'s name appears on more than two UWS projects during any given fiscal year.

Budget Considerations: Projects will not be approved in any one budget cycle for a period of more than two years and then contingent on satisfactory progress. No capital equipment (more than $5,000 per item) may be purchased. Travel for attendance at scientific meetings will not be accepted. Faculty salaries and fringe benefits to be paid from any project may not exceed 10% of the total individual grant (including fringe benefits). Overhead costs are not allowed. Supplies should not exceed 20% of individual grant.

Review of Proposals: Recent literature citations are required for all proposals seeking support from the UWS. Funding decisions are based on ratings by GCC subcommittees and reviews solicited from an international list of experts in the field of the proposed work. The GRAC, which consists of university, state agency, and public representatives, meets as a body to discuss the results of the review process and thereupon to recommend a priority list of projects that the UWS should strive to fund in accordance with budgetary resources. A suitable UWS Groundwater Research Program is then assembled by the WRI and submitted to the GCC before the Department of Administration can release UWS research funds upon passage of a State budget.

UWS Groundwater Research Priorities:
(Presented in no particular order of importance)

- Research on the development and evaluation of groundwater protection and practices.
- Chemical and biological degradation of pollutants in surface soils, subsoils, and groundwater, including identification, toxicity, and persistence of degradation products.
- Transport of pollutants in soil and groundwater, including elucidation of soil and hydrologic factors controlling movement and development or validation of predictive models.
- Impact of waste, and agricultural (including agricultural feeding operations), industrial, or municipal management practices on groundwater quality.
- Characterization of geologic factors affecting groundwater movement, contamination, and aquifer recharge.
- Interactions of groundwater and surface water including chemical transformations in the hyporheic

zone; impacts of groundwater withdrawal on surface waters; influence of groundwater discharge on water quality.

- Wetland impacts on water quality and the interaction of groundwater with wetlands.

- Investigations on the development, understanding, improvement, cost-effectiveness, or utility of innovative biological, chemical or physico-chemical technologies for remediation of contaminated soils and/or groundwater.

- Biological, ecosystem, and human health effects of common groundwater pollutants.

- Field validation of effects of new technologies for on-site wastewater and groundwater treatment on groundwater quality.

- Investigations into the best methods for optimizing groundwater use in Wisconsin, and strategies for long-term management of groundwater.

FY 06 WISCONSIN DEPARTMENT OF NATURAL RESOURCES
GROUNDWATER MONITORING AND RESEARCH PROGRAM

The Wisconsin Department of Natural Resources (DNR) supports a limited amount of monitoring and research on drinking water and groundwater related topics. Funding for these projects has historically come from a variety of state and federal sources and has supported a wide variety of topics (see DNR's Groundwater Research and Monitoring web page at http://dnr.wi.gov/org/water/dwg/gw/research.htm). Recent state budget shortfalls have required the DNR to focus its priorities on projects that fill an immediate need or that more closely match available funding sources. Currently, projects must generally fit under one of the following categories:

1. Management Practice Monitoring: Management practice monitoring is defined as groundwater monitoring or support activities associated with groundwater monitoring, such as laboratory technique development or geologic resource description, for establishing or improving management practices necessary to meet the state groundwater quality standards of NR 140, Wis. Adm. Code.

2. Groundwater Protection Act Monitoring and Research: Recent legislation has directed the DNR to conduct monitoring and research related to interaction of groundwater and surface water, characterization of groundwater resources, and strategies for managing water. These efforts will assist in implementing new requirements for high capacity well approvals and provide information for groundwater quantity management statewide.

3. Wellhead Protection: The state receives funding from the Federal government to implement wellhead protection activities as part of the Safe Drinking Water Act. This category includes activities that support wellhead protection, including groundwater flow modeling, promoting groundwater education and protection at the local level, delineating source water areas, assessing vulnerability of municipal wells to contamination, and encouraging comprehensive planning efforts that include groundwater protection.

The DNR may have up to $140,000 to fund new monitoring and research projects in FY 06 (July 1, 2005 through June 30, 2006), depending upon available funds. In addition, the Department will actively participate in the review of proposals and make recommendations to the other agencies participating in the solicitation to help meet Department priorities. Outstanding proposals may also be considered for funding through other sources. Contact Tim Asplund (608-267-7449) for more information if you intend to submit a proposal.

Applicant Requirements: Funds are restricted to use by UWS investigators and state agency contractors. Others may submit proposals if they include a state-affiliated co-principal investigator. Due to limited funds, the Department encourages applicants to include a UW System eligible investigator to maximize funding options.

Budget Considerations: Proposals will be considered for a maximum of two years. Contracts will be approved on an annual basis. Projects costing less than $35,000 annually will be given greater consideration than more expensive projects. Budget items to be identified should include such things as personnel costs, supplies, equipment, necessary travel, and other appropriate items. State funds cannot support indirect costs or the purchase of capital equipment.

In preparing the budget be aware of the following contractual requirements.

Contractual Requirements: Projects must meet all departmental requirements and guidelines related to groundwater monitoring wells (installation, documentation, and abandonment), sampling, laboratory analysis, and data management. See chapters NR 141 and 149, Wis. Adm. Code for more information.

Investigators shall submit quarterly project status reports to the DNR project manager within 30 days of the end of each quarter. A final report and a 2-page project summary shall be submitted to the project manager within 60 days of the end of the contract period. The final report must contain a thorough discussion of how the results of the project can and should be used by decision-makers.

Review of Proposals: All proposals will be reviewed and rated by DNR staff, and the Monitoring & Data Management and Research Subcommittees of the Groundwater Coordinating Council.

Two important criteria in evaluating each proposal are: 1) whether the proposal addresses a priority issue or an ongoing need as listed below; and 2) whether the project fits under one of the monitoring and research categories specified above. Proposals should contain a clear discussion of the expected practical application of the project results. This will help the reviewer understand the importance of the proposed research, and will ensure that the researcher designs the project with practical application of results in mind.

In making final funding decisions, the DNR's Groundwater Section will formulate its recommendations based on input from all project reviewers and available funds. The Director of the DNR's Bureau of Drinking Water and Groundwater will make the final funding decisions.

DNR Groundwater Monitoring and Research Priorities for FY 06

Priority Issues

Department staff have identified the following priority issues as being of the highest importance for groundwater monitoring and research for FY 06. Unlike the ongoing monitoring needs that follow the priority issues, these are specific ideas for projects for which state groundwater experts see an immediate need. Funding preference will be given to project proposals that address one or more of these priorities.

1) **Information to Support Implementation of 2003 Wisconsin Act 310, the Groundwater Protection Act.** In May of 2004, the state statutes were modified to better manage the use of groundwater resources and provide increased protection to surface waters affected by over-pumping (see summary at http://www.legis.state.wi.us/lc/act_memo/2003/act310-ab926.pdf). The law requires DNR staff to consider the environmental impact of high capacity wells (greater than 70 gpm) if the proposed well would be located near large springs or other sensitive, high quality waters. The law directs the DNR to establish Groundwater Management Areas (GMAs) around Brown and Waukesha counties, where water drawdown is already a significant problem and where over-pumping is creating water quality problems with arsenic, radium and salinity. In order to implement these provisions, the DNR needs additional data and information on the following topics:

   - Identification and mapping of springs - The legislation requires the DNR to review proposed wells that may impact a spring with a flow of > 1 cfs. However, existing information about location and flow rates of springs is limited. An inventory of large volume springs in the state is needed, along with maps and characterization of groundwater flow to these springs. In addition, better information about spring hydrology is needed to better assess impacts of high capacity wells on spring flow rates.

   - Impacts of high capacity wells on surface waters and public water supplies - The DNR is directed to evaluate whether proposed high capacity wells in the vicinity of certain high quality surface water resources (Outstanding and Exceptional Resource Waters, trout streams, large springs) will have a significant adverse impact upon those resources. In addition, wells are restricted if they

impact an existing public water supply well. More information is needed to help the DNR define "significant adverse impact" as well as establish criteria for evaluating proposed wells, including impacts on water quality, flow rates, habitat needs, and existing public water supply wells.

- Evaluation of other potential GMAs - The legislation directs the department to establish GMAs based upon the 150-foot drawdown contour in NE and SE Wisconsin. However, the Groundwater Advisory Committee created by the legislation is directed to identify other areas of the state that may benefit from GMA designation. The DNR is interested in funding projects which gather or use existing information and modeling tools to evaluate potential designation of other areas of the state as a GMA, as well as cumulative impacts of pumping on water resources. Examples may include Dane County, the Little Plover River or other areas in the Central Sands.

2) **Implementation of Statewide Groundwater Monitoring Strategy.** In 2004, the GCC facilitated the creation of a statewide groundwater monitoring strategy. The purpose of the strategy is to provide a common framework for state and federal agencies to use in developing specific groundwater monitoring programs (http://dnr.wi.gov/org/water/dwg/gcc/draftmonitor.pdf). Several components of the strategy require further development in order to enable DNR and others to fully implement the phases of the monitoring strategy. Specific needs include:

- Compilation of existing data on groundwater contaminants - A comprehensive look at existing data for parameters of concern is a starting point for implementing each phase of the groundwater monitoring strategy. Existing databases (Groundwater Retrieval Network, DATCP, UWSP Groundwater Center and others) should be mined for parameters such as nitrate, arsenic, radium, VOCs, and pesticides. Public, private and monitoring well data should be inventoried and assessed on a basin level, aquifer level, or both. Information compiled as part of this component will be used to produce a "Condition of the Groundwater Resource" report.

- Evaluation and expansion of water level monitoring network - The current water level monitoring network (including observation wells and stream flow gaging stations) is not adequate for assessing acute and chronic impacts of groundwater pumping on groundwater levels and stream baseflows. An assessment of the existing network has been completed, along with identification of locations where new observation wells and surface water gaging stations would be beneficial. The next step is to develop a protocol for adding new wells to the network, including an inventory of unused water supply wells that may be suitable for water level and quality monitoring. Another need is to evaluate available methods and estimate or collect stream flow information on small to medium streams not currently included in the network.

3) **Research and Monitoring to Support Wellhead Protection.** The DNR is completing source water assessments for all public water systems in Wisconsin. These assessments include a delineation of the source water area, an inventory of potential sources of contamination, and an assessment of the susceptibility to contamination for each well in the system. Communities will be encouraged to use the information in developing or modifying their wellhead protection plans, as well as in comprehensive land use and water supply planning. Additional research is needed in the following areas to assist communities in this endeavor:

- Hydrogeologic studies to support characterization of vulnerability of municipal drinking water systems to viruses and other emerging contaminants - Limited information exists on the occurrence, transport, and fate of viruses, pharmaceuticals, personal care products, and other emerging contaminants that may impact groundwater-supplied public water systems. Projects are needed that help understand the occurrence and transport of these emerging contaminants, the threat they pose to drinking water systems, and ways to manage contaminant sources within a

source water area.

- Incorporating groundwater and wellhead protection in comprehensive planning efforts - Legislation adopted in 2000 requires all communities that make land use decisions to base those decisions on a comprehensive plan by January 1, 2010. These efforts provide an important opportunity to incorporate wellhead and groundwater protection into land use planning. Studies are needed to identify and evaluate land use planning and management practices that achieve groundwater protection at the local level. In addition, there is a need to develop or evaluate simple tools for local communities to use to understand how land use decisions impact groundwater supplies.

Ongoing Needs

The following topics represent ongoing needs as determined by the Research and Monitoring & Data Management Subcommittees of the Wisconsin Groundwater Coordinating Council, a number of state agency staff, and university researchers. While the Department will give precedence to proposals that meet its priority issues, these needs will be considered in the Department's evaluation of proposals for funding by other agencies. Further information on any of these topics may be obtained by contacting Tim Asplund (608-267-7449).

Groundwater Withdrawals and Connections to Surface Waters – Continued understanding of the implications of groundwater use on groundwater quality, groundwater quantity, and surface water resources is needed. Information needs include estimates of current and projected water use rates, basin-scale groundwater budgets, and quantification of environmental, social and economic impacts of groundwater withdrawals.

Emerging Groundwater Contaminants - Research is needed to determine whether certain emerging substances (pharmaceuticals, antibiotics and hormones, pesticide breakdown products, viruses and other microbial agents) pose a threat to Wisconsin's groundwater resource, and also to human health.

Naturally Occurring Substances in Groundwater - The Department needs more information about the extent and causes of elevated arsenic, sulfate, total dissolved solids (TDS), and radium, low pH, and other naturally occurring water quality problems in order to give advice to homeowners, municipalities, and well drilling contractors.

Land Use Impacts on the Groundwater Resource - Research is needed on the effect of various land uses (e.g. urbanization and agriculture) and management practices on groundwater quality and quantity.

Health Effects of Groundwater Contaminants - Research is needed to better characterize the impact of contaminated groundwater on public health. Pathogenic microorganisms, radionuclides, toxic chemicals (both naturally-occurring and synthetic), and their metabolites are of interest. In addition, the synergistic impacts of contaminant mixtures are of concern to the Department.

Resource Definition – The DNR supports studies that propose to better describe the geologic, hydrogeologic, and geochemical conditions that affect groundwater quality and quantity in specific aquifer or area of the state (e.g. groundwater flow and/or contaminant transport in karst areas).

New Technology - Projects that propose to develop or use new laboratory or field techniques for assessing groundwater quality are encouraged. New applications of existing technologies are also encouraged (for example, characterizing hydrogeologic and geologic formations for management purposes).

Data Management and Integration – The DNR encourages projects that improve existing methods for managing and integrating groundwater monitoring data. Examples include working with state agencies to identify existing archives of data related to groundwater quality and quantity (e.g. monitoring wells, springs); developing a framework for a statewide karst feature database; and improving the system for reporting of water use.

DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION (DATCP)
PESTICIDE RESEARCH PROGRAM

RESEARCH GRANT PROGRAM FOR FY 06
SOLICITATION OF APPLICATIONS

The DATCP Pesticide Research Program is administered by the Agricultural Resource Management Division. Due to budget constraints, DATCP will not have money to fund any new projects in FY 06. DATCP will, however, take part in the proposal review process and recommend funding for projects that meet their research objectives. Contact Jeff Postle (608-224-4503) for more information about DATCP research priorities if you intend to submit a pesticide-related proposal to another funding agency. Investigators should note that the focus of the DATCP program is on pesticide and nutrient research, which includes but is not limited to groundwater issues.

DATCP Research Priorities for FY 06

1. **Evaluation of Nutrient Management Practices on Water Quality.**

   This research should focus on the effects of nitrogen and phosphorus management practices on groundwater or surface water quality, evaluate models for predicting nutrient impacts on water resources, or evaluate the success of nutrient management planning.

2. **Evaluation of the Environmental Fate Investigation Strategies and Remediation Alternatives for Contaminated Soil and Water at Pesticide Spill Sites.**

   Research should investigate the degradation and movement of pesticides at spill sites, develop criteria on the need for and appropriate extent of remedial actions, and evaluate various methods for investigation and remediation of contaminated soil and water.

3. **Development of Methods for Cleaning Pesticide Mixing/Loading Pads and Disposing of Pesticide Rinsates.**

   Projects should evaluate methods of decontaminating pesticide mixing/loading pads and disposing of or treating pesticide-contaminated rinsate water.

4. **Evaluation of Factors Influencing the Patterns of Groundwater Contamination by Pesticides and Pesticide Metabolites in Wisconsin.**

   This topic involves examining factors which influence pesticide leaching to determine areas of the state that are susceptible to groundwater contamination by specific pesticides.

5. **Use Related Monitoring of Pesticides and Pesticide Metabolites in Groundwater.**

   This project should study groundwater contamination by field application of pesticides in key environmental settings such as fractured bedrock areas.

6. **Use Related Monitoring of Pesticides in Surface Water and the Effect of Management Practices on Contaminant Levels.**

Projects on this topic should determine the impacts of pesticide use practices on surface water quality and evaluate the ability of various management practices, such as stream setbacks, to reduce contamination.

7. **Evaluation of the Effect of Pesticide Use on Endangered Species and their Habitat.**

   This topic should explore how the use of specific pesticides affects the habitat and survival of endangered species in Wisconsin and how alternative pest control methods could reduce problems.

DEPARTMENT OF COMMERCE

ONSITE WASTEWATER TREATMENT RESEARCH OBJECTIVES

The Department of Commerce supports research focused on the performance of onsite sewage system designs, products, and management practices that can be incorporated into the administrative rules regulating onsite sewage systems. These designs, products, or management practices must be:

- Directed toward protecting public health, groundwater and surface water quality;
- Result in onsite sewage treatment that is consistent with the provisions of the Groundwater Protection Law;
- Be affordable by the average owner of an onsite sewage system; and
- Be practical for the climate and soils of Wisconsin.

The Department also intends to monitor on an ongoing basis, the performance of various onsite sewage system methods and technologies. The purpose of the performance monitoring is to provide additional information on the long-term performance of the various onsite sewage system methods and technologies, to confirm their reliability, to provide data for improvements and to monitor long-term compliance with the groundwater standards.

As of September 2004, the Department has indicated that it will not have funds available to fund projects in FY 06. However, the Department will actively participate in the review of proposals and make recommendations to the other agencies participating in the solicitation to help meet Department priorities.

Commerce Research Priorities for FY 06

1. Developing a correlation between dry and wet unit measurements for monitoring treatment in soil absorption units - e.g. Fecal count per gram of dry soil versus Fecal count in cfu's/100ml.

2. Research on treatment efficiency of traditional septic tank/septic absorption systems.